

Georgia Department of Transportation Office of Materials

Standard Operating Procedure (SOP) 4

Certification and Monitoring Procedure for Refineries/ Terminals Supplying Performance Graded (PG) Asphalt Binder and Bituminous Materials to the Georgia Department of Transportation (GDOT)

I. General

Monitoring the quality of all Bituminous Materials used on Georgia Department of Transportation (GDOT) projects is the responsibility of the Bituminous Construction Branch of the [Office of Materials](#).

A [Qualified Products List 7 \(QPL7\)](#) is maintained to reference approved suppliers. Bituminous materials meeting Specification requirements shall be obtained from these suppliers by those who are performing work on GDOT projects.

II. Supplier Approval Process

Performance graded binder and bituminous material refineries/terminals that wish to be included on [QPL 7, "Sources of Bituminous Materials,"](#) shall conform to the following criteria:

A. Request for Authorization to Supply Performance Graded Binders

The supplier shall request authorization in writing to the GDOT to supply performance graded binders and/or bituminous materials under the outlined certification procedure. The written request shall address the following points:

1. Outline the Intended Operation

There are two levels of shipping points—Supplier-Manufacturer and Terminal. The Manufacturer is defined as the one who performs the final modification or blending which alters the grade of the PG binder or bituminous material. The general scope of operation and mode of transport to the shipping point shall be included.

2. Materials

The supplier shall specify what material it wishes to supply and indicate whether it is straight run from crude, a blend of two or more crudes, a blend of manufactured products, or some other means of blending. Materials that have been "air-blown" to achieve the performance grade are prohibited.

If polymer modification is required, the polymer shall be either SB or SBS from a source approved by GDOT. If the materials are to be shipped from the refinery to the terminal pre-blended in concentrate form, the terminal becomes the manufacturer and shall provide information on how this material will be handled.

3. Certified Test Results

The written request for authorization shall include certified test results meeting Georgia Department of Transportation (GDOT) Specifications for each initial sample of product proposed for GDOT use. Certified test results shall be provided by a laboratory that has been approved by the [Office of Materials](#). Inspection by the AASHTO Materials Reference Laboratory (AMRL) and/or participation in an AMRL or GDOT proficiency sample program shall be used as the basis for approval of the testing laboratory. AMRL inspection reports along with documentation of resolution of any discrepancies in the AMRL report must be provided upon request. In addition, GDOT shall require that the certifying technician participate in a bituminous technician certification program approved or conducted by GDOT ([refer to III. F](#)).

4. Initial Samples

Samples of each product (Two 1 qt for PG Binders and cutbacks, 2 gal for emulsions) proposed for supply will be forwarded to the Office of Materials at Forest Park, Georgia with accompanying certified test results. If a continuous

process (in-line blending) is used to manufacture binder, the initial sample shall be obtained beyond the in-line blending point.

5. Storage and Handling

A sketch shall be forwarded showing the relative locations and capacities of each tank containing materials offered for use in GDOT work. For polymer modified asphalt binder, include information on storage stability of the material and the agitation system used (if applicable). Users shall consider compatibility before combining asphalts from different approved sources.

6. Certified Public Weighers (CPW)

At each facility used to supply bituminous material for GDOT projects, the supplier shall have at least one employee who is a Certified Public Weigher. All bituminous materials to be used on GDOT projects shall be weighed in accordance with [Laboratory Standard Operating Procedure 15 \(SOP-15\), "Certified Public Weighers"](#). The CPW requirement does not apply to facilities in a state that does not have a Certified Public Weigher Program.

7. Quality Control Plan

The plan relies on the establishment of a record of manufacture of a specification grade material. Surrogate (non-AASHTO) testing which may be suggested by the supplier may be used to guide production but cannot be used for quality control. It is required that high temperature and low temperature AASHTO M320 tests be used to guide manufacture of PG binder. Complete AASHTO M320 tests shall be run at the minimum frequency required by GDOT for each PG material that is manufactured. Complete AASHTO M320 testing is also required whenever there is a substantial change in feedstock or manufacturing process. The supplier shall submit to and have approved by the Department a quality control plan for supplying PG binders or bituminous material under the Approved Supplier Certification (ASC) system. The quality control plan for a manufacturer may vary depending upon the manufacturer's operation. Each manufacturer on the approved list must maintain a testing program that assures that GDOT is receiving material that meets Georgia specifications.

Each day that PG binder is shipped from a terminal to a GDOT project, rotational viscosity testing shall be performed on each grade of material shipped. Rotational viscosity testing shall be performed at 275 °F (135 °C) on the original binder (modified and unmodified) in accordance with AASHTO T316. Dynamic Shear Rheometer (AASHTO T-315) testing shall be performed for polymer modified binders at the required temperature based on the grade being shipped. The $G^*/\sin \delta$ and phase angle (δ) shall be reported to GDOT each day that modified materials are shipped to GDOT projects and original DSR printout shall be submitted for review whenever requested by GDOT. The rotational viscometer may be used in lieu of the Dynamic Shear Rheometer at the appropriate test temperature for unmodified binders at the terminal. Testing and frequency requirements are also outlined on Attachment 2 for PG binder, emulsified and cutback asphalt.

The ultimate QC responsibility lies with the supplier-manufacturer who guarantees the material. All testing conducted by a satellite or independent laboratory shall be covered contractually by the guarantor.

A sample of each material shall be forwarded to GDOT representing daily shipments. All tests shall be performed in accordance with applicable AASHTO methods. The supplier shall collect all samples in a manner that will insure that they are representative of the material and quantities shipped.

For each sample the supplier forwards to GDOT, it will retain for 30 calendar days a companion sample having the identical designation as the sample forwarded. This sample shall remain sealed and be turned over to GDOT if requested.

8. Carrier Inspection Program

Each supplier must have an effective program of carrier inspection prior to loading to prevent contamination, leakage, or spillage. The written request for approval should include the supplier's procedures.

9. Inspections

The supplier-manufacturer and terminal shall permit representatives of the Department to visit the manufacturer's or terminal's location at any time during normal working hours for the purpose of observing the collection and testing of quality control samples, reviewing shipping records and test data, and obtaining quality assurance samples.

10. Stock Samples

During the site inspection, samples of each grade of material offered for use in GDOT work will be obtained by the supplier in the presence of GDOT personnel for test verification by the [Office of Materials](#) or designated GDOT branch laboratories. The manufacturer and/or terminal shall also provide the agency with sampling access to the final product for quality assurance sampling per [GSP 10](#). Laboratory blended samples are not acceptable.

11. Certificate of Guarantee

The supplier shall forward a Certificate of Guarantee (Attachment 1) stating that all material shipped for use in GDOT projects meets applicable specifications. This guarantee must be signed by a responsible officer of the company who has authority to bind the company, and shall be notarized.

12. Price Index Participation

The supplier shall also forward a statement of current asphalt prices by the first of every month (refer to Attachment 3), signed by an authorized representative of the company who has authority to bind the company.

13. Approval

The State Materials Engineer or designated representative will evaluate the request for approval, test results, and the inspector's report, and decide if the supplier should be added to [QPL 7](#).

B. Summary Test Reports

The supplier shall submit a summary test report of all internal and external quality control inspections along with a sample of each product supplied under the ASC system once every 15 days (unless otherwise specified) to the [Office of Materials](#). The manufacturer shall retain a sealed split sample of all quality control samples for 30 calendar days and shall turn over split samples to GDOT if requested.

C. Non-Compliant Materials

If any required tests show that a shipped product was out of specification, the shipping terminal shall immediately cease shipment of the non-complying material, immediately notify GDOT which grade and shipments were affected, and take necessary measures to bring the material back into specification. The supplier shall notify GDOT when material is back in specification and of the corrective action taken including disposition of the failing material. Approval of the corrective action taken must be granted by the [Office of Materials](#) before shipments are allowed to resume. Subsequent samples of materials must be tested for the property that was out of specification in conformance with the criteria in the Testing Frequency section of [Attachment 2](#). In addition, the testing frequency will be increased to once every 7 days. If approved by GDOT, the testing frequency may be decreased to once every 30 days if the individual tests are within specification for 6 consecutive test periods.

D. Inspection Reports Required

The supplier-manufacturer and terminal shall maintain detailed reports of quality control inspections, test results, and shipments. Documentation of test results must include the grade, name of the manufacturer, and date of testing. If proprietary products are used the date of manufacture shall be included also. The documentation of test results shall be sent to GDOT immediately upon completion if requested, and a record shall be kept on file. If in-line blending is used, the supplier-manufacturer shall keep record of the proportions based on mass or other indicators approved by GDOT. These records will be kept for a minimum of six (6) months. GDOT may review the supplier-manufacturer's reports and quality control plan and make suggestions for improvement if warranted.

E. Approval to Supply

Approval to supply under this certification system will remain in effect as long as the supplier-manufacturer and terminal remain in compliance with departmental guidelines and contingent upon a record of satisfactory performance as determined by GDOT. GDOT shall determine satisfactory performance based on the supplier-manufacturer's and terminal's detailed quality control records, the Department's quality assurance testing, and participation in GDOT's annual proficiency sample program.

F. Shipping Reports

The manufacturer shall furnish a Certificate of Analysis (COA) to the receiving terminal to assure GDOT specification compliance prior to acceptance. The COAs representing the current materials in stock shall be kept on file for GDOT review if requested.

G. Storage and Handling Instructions

With each grade of material, the manufacturer shall furnish instruction on proper storage and handling. The manufacturer shall also furnish to the State Materials Engineer recommended mixing and compaction temperatures for each PG binder. (This will not apply to producers of emulsified or cutback asphalt.) The manufacturer may be a refinery, a terminal, in-line blending facility or an HMA producer. The following description outlines, but does not limit, the responsibilities of each:

1. Refinery

If there is no further modification to the PG binder or bituminous material after its initial production, the refinery is the manufacturer and must provide the certification (COA). This means that all the certification guidelines shall be followed by the refinery (manufacturer).

2. Terminal

If there is any modification of the PG binder or bituminous material at the terminal, the terminal becomes the manufacturer and must provide the certification. This means that all of the certification guidelines shall be followed by the terminal. If there is no modification of the product grade at the terminal, the terminal must follow all

instructions from the original manufacturer with regards to storage and handling. If the recommended storage life is exceeded, the material shall not be shipped until testing is performed showing that the material meets the specified grade.

3. In-Line Blending Facility

If there is no further modification to the PG binder or bituminous material after being blended in-line, the in-line blending facility is the manufacturer and must provide the certification. This means that all the certification guidelines shall be followed by the in-line blending facility.

4. HMA Producer

If there is any modification of the binder grade at the HMA plant, the HMA producer becomes the manufacturer and shall provide the certification. Approval may be granted on a project basis.

If there is no modification of the product at the HMA producer's plant, the HMA producer shall follow all instructions from the original manufacturer with regards to storage and handling. The certification from the manufacturer shall be available to GDOT to verify that it is from an approved manufacturer and the recommended storage life has not been exceeded. If the recommended storage life is exceeded, the material shall not be used until testing is performed showing the material meets the specified grade.

III. Responsibilities of Approved Supplier

A. Active Supplier

Once a supplier is approved, it is committed to uphold the procedures and standards set forth by GDOT. Any changes it desires to make in areas such as, but not limited to, operations, testing and carrier inspections, should be discussed with the Bituminous Control Engineer of the [Office of Materials](#) prior to implementing any change that may influence retention on the [Qualified Products List \(QPL 7\)](#).

Sampling of products for acceptance from the manufacturer, terminal and HMA producer will be performed in accordance with this Standard Operating Procedure and [Georgia's Sampling Procedure 10 \(GSP-10\)](#), "[Sampling Procedures for Bituminous Material](#)".

Current asphalt price quotes must be faxed on Attachment 3 to the Bituminous Control Unit of the [Office of Materials](#) by the 1st of each month. Each quote must be signed by an authorized representative of the company who has authority to bind the company. Failure to submit the asphalt price quote on time could result in the suspension or removal of the supplier from the Qualified Product List (QPL 7).

GDOT may consider the delivered bituminous material to be acceptable and allow it to be used provided it is the intended type and grade, it is from a source listed on [QPL 7](#), and the Bill of Lading contains the following items.

1. The Bill of Lading shall originate from and display the name of the guarantor of the bituminous material.
2. Project Number and Contract I.D. Number, or Maintenance P.O. Number, or denote "State" or "GDOT".
3. Source and grade of material.
4. Tare and gross weight of the load and net weight of material.
5. Number of liters (gallons) and specific gravity at 60 °F (15.6 °C).
6. Brand name, percentage, and number of liters (gallons) of anti-stripping additive if applicable.
7. Brand name and amount of silicone if applicable.
8. Certified Public Weigher's seal of the person who oversaw loading of the material unless the material was shipped from a state that has no Certified Public Weigher Program. The Certified Public Weigher may electronically affix his or her official registered signature, seal or certification number and expiration date as applicable.
9. Stamp or equivalent showing "Certified to Meet Georgia Department of Transportation Specifications." If proprietary products are used, a statement must also be included that the materials used are from one of GDOT's approved sources. The certification must also include the date of manufacture.
10. Date and time loaded.
11. Purchaser (QPL-45 HMA Producer or Contractor) and plant destination
12. Carrier, Truck Number and last product hauled.
13. Indicate that the material was blended in-line if applicable.

B. Inactive or Non-Approved Supplier

In the event material is received from a supplier not listed on [QPL 7](#), or listed as "Inactive", the Engineer shall contact the Bituminous Construction Branch of the Office of Materials to determine if the supplier has been approved; or, if inactive, to see if the material is currently acceptable.

C. Sample Designation

Designations have been established by GDOT to identify the source of the sample. Further explanation follows:

1. Stock Sample (S)

“S” samples are obtained by GDOT inspectors during visits to a supply facility. The sample is obtained from the supplier’s storage or shipping tank and represents “Stock” material that is offered for use in GDOT work. All “S” samples are tested by GDOT personnel in a GDOT laboratory.

2. Refinery Sample (R)

“R” samples are obtained by the supplier (normally a terminal) each day material is shipped for use in GDOT work. This sample is tested by the supplier on the same day the GDOT shipments occur, unless the shipment occurs after-hours, in which case, the testing shall be done immediately the next morning. In either case the shipping tank must be sampled for testing on the same date the shipments occur. A companion sample is forwarded to a GDOT Lab for possible Surveillance Analysis testing.

3. Monthly Complete Sample (X)

“X” is a designation given to the supplier Complete Analysis results so supplier data can be differentiated from GDOT test results. This sample is obtained by the supplier once every 15 days (or frequency established by GDOT) representing materials offered for use in GDOT work. “X” samples are forwarded along with a test report for each grade of material.

Each approved supplier will provide Certified Complete Analysis to the Department on each type and grade of material shipped. This Certificate will be provided at the frequency specified in the previous paragraph. All tests listed in the GDOT Specifications for that material must be on the Certificate.

4. Monthly Complete Sample (Y)

“Y” is a designation given to the GDOT Complete Analysis test results so GDOT data can be differentiated from Supplier test results. This sample is forwarded as an “X” by the supplier for comparison testing at a GDOT lab.

5. Project Sample (P)

“P” samples are obtained by either GDOT or contractor personnel (when approved) for Project Control purposes or for Independent Assurance. The sample is taken from an asphalt plant storage tank or distributor and represents material actually used on a project. These samples are tested for Surveillance Analysis by GDOT personnel in a GDOT laboratory.

6. Start-Up Sample (SU)

Start-up samples are required by GDOT whenever a hot mix asphalt producer has not supplied product to a GDOT project for a consecutive 5 day period. These samples may be obtained by GDOT or contractor personnel for testing in a GDOT laboratory. Results shall be approved by the Bituminous Construction Branch prior to production.

D. Types of Sample Analysis

There are two types of sample analysis: (1) Complete Analysis, and (2) Surveillance Analysis.

1. Complete Analysis (C)

This consists of all specification tests outlined in the appropriate GDOT Specification. If compliance is confirmed by this analysis, shipping is allowed to continue uninterrupted.

2. Surveillance Analysis (S)

This is a reduced number of tests that can be performed frequently to scan for changes in material character as it moves from the point of manufacture to numerous supply facilities, to contractors, and to the construction project. Surveillance tests are outlined in [Attachment 2](#).

3. When a substantial change is noted in surveillance analysis results, an investigation is initiated to determine the cause. In addition, the number of complete analysis samples may be increased if warranted.

E. Changes In Quality Control Program

The supplier shall review its operation and forward a revised Quality Control Plan when changes have occurred, such as changes in personnel, testing equipment and carrier inspection procedures. The Certificate of Guarantee should also be made current at these times.

F. Technician Training and Certification Program

After January 01, 2010, GDOT will issue one or more of the following [Technician Training Certifications](#) to all supplier technicians who currently test bituminous materials for GDOT acceptance:

- a) Superpave Binder Technician Training and Certification (Level IA, Level IB, Level I, and Level II)
- b) Emulsified Asphalt Technician Training and Certification (Level I and Level II)
- c) Cutback Asphalt Technician Training and Certification

- d) Temporary Certification (for all of the above)

In order to perform QC testing on GDOT samples, a technician shall obtain one of the applicable above mentioned GDOT Certifications. Temporary Certificate (TC) will expire after 45 shipping days or within 90 calendar days from date GDOT issues the TC, whichever comes first. All other certifications are good for three years; recertification is required to continue testing under this program. In addition to the technician, the QC Manager shall also be GDOT certified. More details regarding the above program can be found in the “Bituminous Construction Bulletin” issued to “All Georgia Department of Transportation Approved Suppliers of PG Binders, Emulsified, & Cutback Asphalt Cement” by Georgene M. Geary, P.E., State Materials and Research Engineer, dated June 16, 2009.

IV. Removal from and Reinstatement to [QPL 7](#)

A. Removal from [QPL 7](#)

The Department reserves the right to remove any supplier from the approved list any time it fails to provide proper assurances that it is operating and complying in accordance with this procedure, or when confidence is lost in the supplier’s capability or willingness to supply material meeting the applicable GDOT Specification.

A supplier may be placed in a “Special Control” status in lieu of removal from the approved list whenever GDOT feels that the supplier is experiencing temporary problems with materials or administrative requirements. If this occurs, a supplier will be notified of its status and that corrections must be made and satisfactory practices must be strictly adhered to for 7 construction days. GDOT will inform the supplier of the conditions under which it must operate during the interim period.

A supplier can only remain on “Special Control” for 7 construction days, after which it must have shown satisfactory performance or be removed from the approved list.

B. Reinstatement to [QPL 7](#)

Once removed from the approved list, a supplier may gain reinstatement in the following manner:

1. The supplier shall make a written request to the State Materials Engineer asking to be reinstated to the approved list. The request should detail the causes and solutions to the problem areas which caused removal from the approved list. In addition, the supplier should state measures taken to prevent recurrence of problems.
2. If, after review of the request for reinstatement, it appears the producer’s problem has been solved, an inspection of facilities will be made, and all material in stock will be sampled.
3. If, after examination of data gained from sub-paragraph 1 and 2 above, the State Materials Engineer finds that the supplier meets all requirements for an approved source, the supplier may be reinstated to the approved list.

State Materials Engineer

Director of Construction

Attachment 1

**Typical Form for the Guarantee Provided for in
Section II-A of the Standard Operating Procedure
for Monitoring the Quality of Bituminous Material**

(Name of Supplier)

CERTIFICATE OF GUARANTEE FOR CALENDAR YEAR _____

(Name of Supplier)_____ does hereby certify and guarantee that all Bituminous Materials produced or shipped from its terminal / refinery located at (address)_____ to construction or maintenance projects of the Georgia Department of Transportation shall be manufactured under strict quality control and shall conform to the requirements of the Specifications of the Department of Transportation or any modifications or additions to such Specifications in force and applicable to the material at the time it is shipped.

(Name of Supplier)_____ agrees to abide by and cooperate with the Georgia Department of Transportation's control procedures as established in the Standard Operating Procedure 4, "Certification and Monitoring Procedure for Refineries/Terminals Supplying Performance Graded Asphalt Binder and Bituminous Materials." This Certificate of Guarantee supersedes all previous certificates and shall remain in effect as long as this company continues to furnish material to the Georgia Department of Transportation construction or maintenance project under the privileges of [Qualified Products List 7, "Sources of Bituminous Material"](#).

Subscribed and Sworn to me this

_____ day of _____, 20____

(Name and Title)

(Notary Public)

(Supplier)

Attachment 2

**Samples and Tests Provided to GDOT
By Suppliers Shown on QPL 7**

MATERIAL	MANUFACTURER OR REFINERY (Complete Analysis)			SHIPPING FACILITY (TERMINAL) (Surveillance)		
	Forward sample and attach certificate of analysis as given below.			Forward sample and attach certificate of analysis as given below.		
	Tests ¹	Sample Size	Frequency	Tests ¹	Sample Size	Frequency
Performance Grade Binder	Flash Point (COC) Rot. Visc. @ 135°C Mass Loss (RTFO) Dynamic Shear: (Org) (RTFO) (PAV) Creep Stiffness (S) m-value	Forward Two, 1-qt samples (~2L) (Attach Certificate of Analysis) Retain Two 1-qt (~2L)	Once every 15 days unless specified by GDOT	Rot. Visc. @ 275 °F (135 °C) Dynamic Shear ²	Forward Two 1qt (~1L) (attach GDOT form #504M) and retain 1qt (~1L)	One sample per grade representing material shipped each day.
Anionic Emulsion	Saybolt-Furol Viscosity Residue (%) Pen. on Residue Sieve Test Settlement Storage Stability Demulsibility Specific Gravity @ 60°F (15.6 °C)	Forward Two 1 gal. (~7.6 L) (Attach Certificate of Analysis) Retain 1 gal (~3.8L)	Same as above	Saybolt Furol Viscosity Residue (%) Pen. on Residue Sieve	Forward Two 1 gal (~3.8L) (attach GDOT form #325M) and retain 1 gal (~3.8L)	Same as above
Cationic Emulsion	Saybolt-Furol Viscosity Residue (%) Pen. on Residue Sieve Test Settlement Storage Stability Demulsibility Specific Gravity @ 60°F (15.6 °C) Cement mixing (if applicable) Particle Charge Oil (%)	Same as above	Same as above	Same as above	Same as above	Same as above
Cutback	Kinematic Viscosity Distillation Residue(%) Pen. on Residue Specific Gravity @ 60°F (15.6 °C) Flash Pt. (if applicable)	Forward Two 1 qt (~2L) (Attach COA) Retain 1qt (~1L)	Same as above	Kinematic Viscosity Dist.Residue (%) Pen on Residue	Forward Two 1qt (~1L) (attach GDOT form #503M) and retain 1qt (~1L)	Same as above

¹Test methods are defined in appropriate Specifications.

²Rotational Viscometer may be used in lieu of Dynamic Shear Rheometer for unmodified binder.

³Specifications supersede this Attachment, as the above lists may not be comprehensive. Refer to Specifications for specific grade requirements.

Attachment 3

MONTHLY ASPHALT CEMENT PRICE

FROM: _____
(Supplier Name & Location)

TO: GEORGIA DEPARTMENT OF TRANSPORTATION
Office of Materials
15 Kennedy Drive, Forest Park, GA 30297

The posted price of Asphalt Cement on _____ is provided below:
(Date)

LOCATION	PRODUCT(S)	Price/Ton (FOB Terminal)
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I hereby certify that I am the authorized person of this company to provide this information.

Sincerely,

(Signature)

Office Phone Number

(Print Name & Title)

Cell Number or Alternate Phone No.

(e-mail address)

Fill out and Fax this sheet to GDOT at 404-608-4858 by the 1st of each month